Insights into spatial sensitivities of ice mass response to environmental change from the SeaRISE ice sheet modeling project II: Greenland

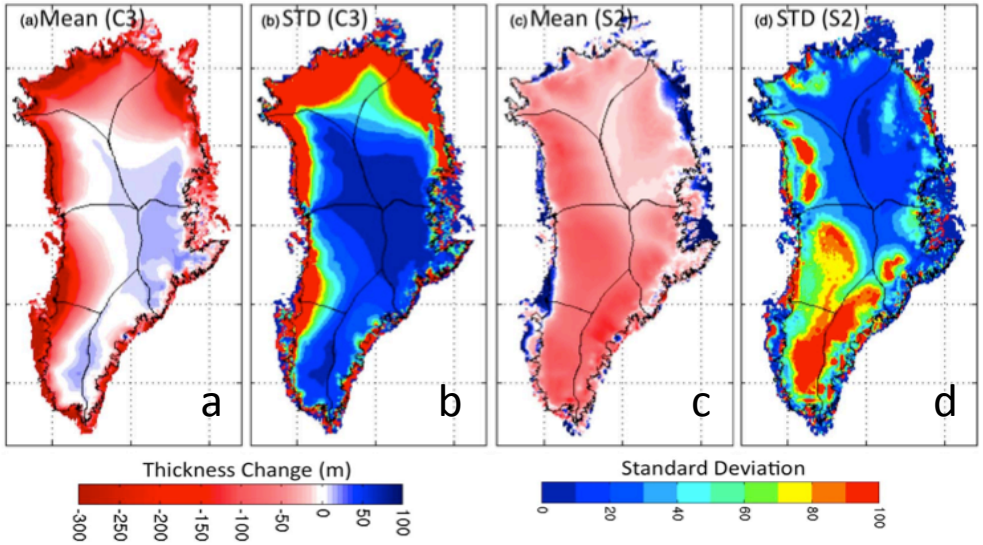
Objective

Examine and understand patterns of projected Greenland ice sheet mass loss from 2000 to 2200 using output from SeaRISE model assessment project

Approach

- Treat experimental results from 8 participating models as an ensemble
- Calculate unweighted ensemble mean and standard deviation to identify similarities and differences in model response to common forcings
- Understand spatial and temporal patterns of response to climate forcing, dynamic forcing, and combinations of the two

Ensemble mean and standard deviation (STD) of ice thickness change for surface melting experiment (a,b) and 2x increase in sliding experiment (c,d)



Impact

Response of models to future changes in surface mass balance (atmos. forcing) is largely similar. Responses to other forcings indicate high model sensitivity to basal boundary conditions (sliding implementation) and model initialization methods.

Nowicki, S. *and 30 others*. 2013. Insights into spatial sensitivities of ice mass response to environmental change from the SeaRISE ice sheet modeling project II: Greenland. *J Geophys Res*. doi:10.1002/jgrf.20076.